AMSAT News Service Weekly Bulletins
Issue: ANS-281
Date: 2017-10-08
Sources: amsat-ans-2017-ans-281-weekly-hyperkitty-c023a1ebed.txt

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AMSAT NEWS SERVICE
ANS-281.01

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat dot org.

In this edition:

* ARISS One Step Closer to Flying New Equipment to ISS
* VUCC Awards/Endorsements for September 2017
* Sputnik Replica - The Transmitter
* PE1ITR Posts Impressions and Photos From AMSAT-DL Annual Meeting
* AMSAT Phase 4 Groundstation Report for the Week 3 October 2017
* COMET Program Training
* Get Ready for the 2017 AMSAT Space Symposium and Annual Meeting
* Satellite Shorts From All Over
+ Congratulations to Alex N7AGF
+ Daily DX Report
+ Gérard Auvray, F6FAO Slient Key

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ANS-253.01 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 281.01
>From AMSAT HQ KENSINGTON, MD.
September 10, 2017
To All RADIO AMATEURS
BID: $ANS-281.01

ARISS One Step Closer to Flying New Equipment to ISS

On behalf of the ARISS International team, I am proud to announce that on Friday September 29th the ARISS team submitted the InterOperable Radio System (IORS) Safety Data Package to NASA for review! Our next step in this process is the Safety Review, which is planned for November 2.

Submitting this was a phenomenal accomplishment!! Particularly since the entire Safety Data Package was developed exclusively by our ARISS volunteers---something we have never done before. Prior to this submittal, all safety packages---from Owen Garriott's in the early 1980s to today--were developed with contractors from NASA, ESA or Energia. And might I say at substantial expense. I am pleased that the ARISS team did it ourselves!

Why is this important? Two reasons:

1) This is a very major IORS milestone. We cannot get to orbit without successfully completing the safety review process and getting our hardware certified for flight.

2) Developing the safety package exclusively with volunteers is an innovative and gutsy approach to keep costs down and get the hardware flown sooner. Otherwise we probably would have to slip launch 1-2 years while we acquired additional funding to get this done.

NASA Human Spaceflight Safety Certification is a four-step process---Phase 0, Phase 1, Phase 2 and Phase 3. The material we submitted covers the first three of the four phases. As part of Phases 0, 1 and 2, we need to make sure NASA understands our design. And we need to show NASA that we understand all the potential hazards that our hardware systems could introduce to ISS and how we have mitigated (or prevented) these hazards. One example is to demonstrate to NASA that our IORS was designed with electrical wiring and circuit breakers that possess adequate features and sufficient margin to prevent an electrical shock or fire on-board the ISS. Critically important stuff! The final phase (Phase 3) will be complete when we have completed all testing and NASA inspection of our flight hardware and NASA deems it flight worthy. At that point the IORS will be flight certificated and we can fly! Currently we are looking to March-May 2018 for flight readiness.

For those not following ARISS hardware development very closely, we are developing the IORS to replace most of the on-board radio hardware. It is called "interoperable" because it is being designed to be operated anywhere on ISS. But specifically, it will be used in the two areas with ISS Ham legacy antennas: the Columbus Module and the Russian Service Module. Interoperability allows us to leverage existing ISS power cables, it can be moved between modules in the event of on-orbit failures, and it supports common training and operations. The IORS is the most complex in-cabin hardware system we have ever designed, built, tested and flown as a volunteer team. We will remove the 3 watt Ericsson handheld radio system, initially certified for flight in 1999, and the Packet module--both of which have recently had issues-and install a brand-new, specially modified 25 watt JVC Kenwood D710GA radio to enable a multitude of new or improved capabilities on ISS, including voice repeater and be
tter APRS operations. A key development is the Multi-Voltage Power Supply (MVPS), which interfaces with multiple electric outlet connection types on ISS and provides a multitude of power output capabilities for our current and future ARISS operations and amateur radio experimentation. It will also allow our Ham Video system to have a dedicated power outlet, eliminating the outlet sharing we have now, which shuts down Ham Video at times.

This effort would not be possible without the dedication and persistence of our IORS development team of volunteers. They have been working tirelessly behind the scenes to provide an outstanding amateur radio experience for all. Our IORS development team includes: Lou McFadin, W5DID, our Chief Engineer; Kerry Banke, N6IZW, the MVPS lead designer; Bob Davis, KF4KSS, the MVPS Mechanical enclosure designer; Ed Krome, K9EK, supporting IORS thermal control and cabin noise dissipation; Dave Taylor, W8AAS, our JVC Kenwood D-710 development liaison; Bob Bruninga, WB4APR, our APRS and D-710 operations expert; Shin Aota, JL1IBD, and Phil Parton, N4DRO for all their phenomenal support from JVC Kenwood; Kenneth Ransom, N5VHO, our operations lead; and our safety package team-Ken Ernandes, N2WWD, and

Gordon Scannell, KD8COJ. Kudos to all on a fantastic effort!

Designing, building and testing the IORS is a huge undertaking and *very* expensive. We need to build ten (10!) units to support flight hardware, flight spares, testing, and training across the international team. Hardware parts, development tools, fabrication, testing, and expenses to certify the IORS are expected to cost approximately $150,000. And the hard part (i.e. most expensive part) is just now starting. So please consider making a donation to ARISS to take our hardware system from dream to reality. You can donate to ARISS directly through the AMSAT web site at: http://www.ariss.org/donate.html. ALL donations go directly to ARISS.

Thank you for all your support to inspire, engage and educate our youth to consider wireless communications and amateur radio, and to pursue STEAM careers through our exciting human space exploration and amateur radio endeavor!

[ANS thanks Frank Bauer KA3HDO for the above information]

VUCC Awards/Endorsements for September 2017

The VUCC Standings for September 30th are still not without problems. Totals that changed a few up or down are still not corrected. A few more callsigns are missing. Below are the totals that changed on 8 September 2017 which were in the last posting. The 30 September pdf dropped N1AIA and AK4WQ(EN34). AI6GS and K7TAB are still missing.

Previous Callsigns missing on 08Sep2017:
AI6GS (230)
K7TAB (100)

New Callsigns Missing on 30Sep2017:
N1AIA (216)
AK4WQ(EN34) (107) (was 106 01Aug2017)

Callsigns with totals that went DOWN:

KO4MA 1564 -1562
AC0RA 1143 -1142
K8TL 974 -973
AA5PK 876 -875
W6ZQ 561 -560
K4XP 102 -101

Callsigns with totals that only went UP by a few:

K6FW 603 -606
KK4FEM 476 -480 (now NJ4Y at 502)
KL7CN/W6 249 -250
KX9X 158 -159
AK4WQ(EN34) 106 -107
VA3NNA 100 -102
(The above callsigns could be legitimate endorsements.)

Here are the apparent endorsements and new VUCC Satellite Awards issued by the ARRL for the period September 8, 2017 through September 30, 2017.
Congratulations to all those who made the list this month!

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CALL    GRIDS

KB1RVT  1524
K4FEG    818
NJ4Y     502
W4FS     482
W0DHB    400
K5ND     351
NS3L     225
W6ZQ(DM42) 202 (NEW VUCC)
NR0T     200
WA7HQD   138
PT2AP    102 (NEW VUCC)
PS8ET    101 (NEW VUCC)
K4RGK    100 (NEW VUCC)
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This list was developed by comparing the ARRL .pdf listings for September 8th and September 30th, 2017. It's a visual comparison so omissions are possible. Apologies if your call was not mentioned. Thanks to all those who are roving to grids that are rarely on the birds. They are doing most of the work!

[ANS thanks John K8YSE for the above information]

Sputnik Replica - The Transmitter

Stefan's Radio Blog posted at:
http://www.radio.cc/post/franks-sputnik-transmitter

Frank's Sputnik Replica - The Transmitter

In the January edition of the RAZzies magazine Frank Waarsenburg PA3CNO continued to report about building a replica of the original Sputnik 1 transmitter.

In his interesting article he writes about the difficulties and obstacles he faced: Missing data for winding the coils, errors in 2p19b datasheets and a critical bug in the schematics. He described his approaches to tackle these problems. (See the blog page for a photo of the project.)

I think for everyone who is interested in understanding the Sputnik 1 transmitter or who wants even to build a replica Frank's article is a must read. Please note that the RAZzies is a Dutch HAM magazine. If you don't understand Dutch simply use the Google translator or similar tools in order to get a translation.

Access Razzie's Magazine at:
https://www.pi4raz.nl/razzies/razzies201601.pdf

[ANS thanks Stephan's Radio Blog for the above information]

PE1ITR Posts Impressions and Photos From AMSAT-DL Annual Meeting

http://pe1itr.com/satellite/verslag-amsat-dl-jahreshauptversammlung-2017.htm
(Ed. note - Google translate helps)

On September 30th I visited with Jack, PA0BOJ, the AMSAT-DL Jahreshauptvers-
ammlung 2017. We left Bochum at 7:15 am and at 8:00 we were home again. It
was a long and interesting day, revealing that it was a blast of activities.

In addition to the usual administrative issues, the central theme of the
annual meeting was the developments of and around the future Es'hail-2 satel-
lite. The expectation is now that the satellite will be launched in Q2 2018.

There were lectures on the construction of the various ground stations and
their current status. It was nice to see that in the command, ground stations
built in extensive switching options, which also included space for experiments.

Also the well-known LEILA is built in custom form and there will be a websdr
available to monitor the downlink signal.

There was special attention to the digital television capabilities of this
satellite. In this context I found the reading of Thomas, DG5NGI, interest-
ing, in which he told me about the DVB-S2 mode that one wants to use. And
even talked about DVB-S2X as a possible next step afterwards. I had not
heard of DVB-S2 before, but now I understand that DVB-S2 is more packet
oriented than DVB-S, so there are more opportunities in the data stream
build-up. Spoken was about FEC, Modulation, BBFRAMES, Dynamic Coding and
Transport Capability.

It was also clear that for experimenting with datv on the wideband trans-
ponder, coordination between users is needed. The BATC is developing a
website that provides more information in this performance.

There was also a dummy S/X band P4A transponder at the meeting. Jack had taken his DVB-S S-band television transmitter and X-band receiver. And I'm my ssb/cw S/X band equipment. With this we thoroughly tested the
dummy transponder. I even made my first qso about this phase4a style S/X
band dummy transponder with Achim DH2VA, which was on the other side of
the room. We have therefore exchanged 59 +++ reports. And we were again
a nice experience richer.

[ANS thanks Rob, PE1ITR, and AMSAT-DL for the above information]

AMSAT Phase 4 Groundstation Report for the Week 3 October 2017

Michelle Thompson, W5NYV, has released the Weekly Report for the AMSAT Groundstation Team.

https://www.youtube.com/watch?v=tcefTXTj9b0&feature=youtu.be

Her full report, including notes are posted with the video (click on 'See More'). This week Michelle discusses our simplified pi/2 BPSK decoder, working under the assumption that symbol timing and phase have already been resolved to a single sample per symbol.

This work fits into the much larger picture of acquiring phase, timing of symbols, demodulation, decoding, and correlation to the fixed patterns
of the Start of Frame field in the physical layer header that helps define each DVB-S2 frame.

The DVB-S2 physical layer header is sent using a modulation scheme called
pi/2 BPSK. This scheme is defined in the standard. Since we're using GNU
Radio as our reference design, we decided to make a custom block in GNU
Radio to do this. This block will evolve to include our specific type of correlation for the Start of Frame as well.

We started with the definition in the specification where, "SOF shall correspond to the sequence 18D2E82HEX (01-1000-....-0010 in binary notation, the left-side bit being the MSB of the PLHEADER)" 90 degree BPSK, so in complex notation, it's…"The PLHEADER, represented by the binary sequence (y1, y2,...y90) shall be modulated into 90 p/2BPSK symbols according to the rule:

 I sub 2i-1 = Q sub 2i-1 = (1/v2) (1-2y sub 2i-1), I sub 2i =
 - Q sub 2i = - (1/v2) (1-2y sub 2i) for i = 1, 2, ..., 45 "

[Ed. note: examples and explanation are in the video]

Assuming that the demodulation is correct, the next step from here is to take our start of frame and look for received patterns that match
it. When this happens, we will produce a tag. Tags in GNU Radio are synchronized chunks of information that are attached to samples. It is like metadata that can be used by other blocks. For this block, we are going to follow the conventions in the general correlation estimation block. This means that there will be several tags that can be used by downstream blocks that need them. Those downstream blocks have already implemented functions that consume the tags, so if we produce them, it makes for more useful flow graphs.?

[ANS thanks Michelle Thompson, W5NYV for the above information]

COMET Program Training

The COMET Program is pleased to announce the publication of the new lesson,
"Communicating Winter Weather Surface Impacts
<https://www.meted.ucar.edu/training_module.php?id=1320>". This lesson will
introduce National Weather Service (NWS) forecasters to the benefits of
pre-season coordination in understanding the critical needs of decision-makers, particularly the state and local Departments of

Transportation (DOTs). The strategies used by DOTs to mitigate road impacts during the winter and how the NWS can best support their needs are also discussed. Learners will gain insight into the common methods of collaboration between the NWS and DOT, and the different types of winter weather events in which they work together. Learners will also practice communicating winter weather forecast information that best support the concerns of DOT, including working through a simulation to see the effects of their communication choices on DOT decisions. The lesson will take about an hour to complete (not including the quiz).

The intended audience for "Communicating Winter Weather Surface Impacts <https://www.meted.ucar.edu/training_module.php?id=1320>" includes operational forecasters in U.S. NWS Weather Forecast Offices, and others with general interest in communicating weather information. NWS forecast offices could use the lesson in their training programs in preparation for the winter weather season.

For best viewing of content on the MetEd website, please ensure that you have a browser updated to its latest version with JavaScript enabled. For technical support, please visit our Registration and Support FAQs <https://www.meted.ucar.edu/resources_faq.php>.

We welcome any comments or questions you may have regarding the content, instructional approach, or use of this lesson. Please e-mail your comments or questions to Vanessa Vincente (vincente ATucar.edu) or Tsvetomir Ross-Lazarov (tlazarov AT ucar.edu).

[ANS thanks Lloyd Colston, KC5FM for the above information]

Get Ready for the 2017 AMSAT Space Symposium and Annual Meeting
Everything you need to know and get done today

Here is a summary of what you need to do to get ready for the 2017 AMSAT-NA Space Symposium and Annual Meeting, October 27-29, 2017 at the Silver Legacy Resort Hotel, Reno, NV.

2017 Annual AMSAT Symposium important deadlines.

The last day to reserve a meal at the Saturday Evening Banquet is Sunday, October 8, 2017.

The last day to register online at the Silver Legacy with the guaranteed rate is Friday, October 12, 2017.

The last day to register online is Friday, October 20, 2017.

The last day to reserve a seat at the Area Coordinators Breakfast is Wednesday, October 25, 2017.

If you miss the Registration Deadline, you may still show up at the door and pay $55. There will be no late orders for the Banquet or Breakfast as this has to do with the rooms and tables necessary.

Complete Your Symposium Registration in the AMSAT Store

You can register for the 2017 Space Symposium, the Saturday Evening Banquet, the Sunday Morning Area Coordinators breakfast, the Sunday afternoon tour to Virginia City, and the Monday tour to Lake Tahoe in the AMSAT store: https://www.amsat.org/shop/

Symposium Registration (including a copy of the Proceedings)
+ Starting September 15 -- $50
+ At the door -- $55

Make Your Reservations for the Symposium Hotel in Reno

You must make your hotel reservations at the Silver Legacy at this link: https://www.amsat.org/symposium-hotel/ (block code ISAMSAT)
The hotel phone number is 1-800-687-8733.

TO GUARANTEE OUR RATES PLEASE MAKE YOUR RESERVATIONS BEFORE OCTOBER 12, 2017.

The Silver Legacy is a 4-star Resort/Hotel/Casino which is an iconic 42-story hotel with its massive round dome and spires centered in downtown Reno.

2017 AMSAT-NA Space Symposium Schedule Announced

The Schedule for the 2017 AMSAT-NA Space Symposium and Annual Meeting, October 27-29, 2017 at the Silver Legacy Resort Hotel, Reno, NV.

Check the Symposium Web Page for updates and new information as it becomes available: https://www.amsat.org/symposium-schedule/

2017 AMSAT-NA Space Symposium Tours Announced

The 2017 AMSAT Space Symposium will be held Friday, Saturday, and Sunday, Oct 27-29 in Reno. There will be two tours of the sights around Reno offered after the Symposium ends on Sunday morning.

The first tour is offered on Sunday October 29, 10:00AM to 4:00PM
This tour will visit Historical Virginia City. Tour cost is $46 per person. Lunch will be on your own.

The second tour is offered on Monday October 30, 8:30AM to 5:30PM
This tour will Discover Truckee, the Donner Party, Lake Tahoe & Genoa. The tour cost is $80 per person. There is an optional Lake Tahoe Cruise on a paddle-wheel ship available. The tour cost with the Lake Tahoe Cruise is $147 per person. Lunch is provided with either tour option.

A description of the tours has been posted at https://www.amsat.org/symposium-tours/

Complete tour information is available by paging through each tour description and a link to purchase the tour through the AMSAT Store is provided below the description. You may also purchase all Symposium events at the AMSAT Store.
https://www.amsat.org/product-category/amsat-symposium/

Introducing Banquet Keynote Speaker Garrett L. Skrobot, NASA Cubesat Launch Initiative Program, Kennedy Space Center

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Garrett was born in Myrtle Beach, S.C., but moved to West Cocoa, Florida at the age of six months. Immediately after graduating from Cocoa High School in 1980, Garrett began a four-year tour of duty in the United States Marine Corp that took him around the world.

In 1988 Garrett earned a Bachelor of Science in electrical engineering from the University of Tennessee; he later received his master's degree in space systems from the Florida Institute of Technology in 1992.

Garrett joined the NASA team at Kennedy Space Center in 2000 as an Integration Engineer for the Launch Services Program. Prior to his work with NASA, Garrett was employed by General Dynamics as a System Engineer for the Atlas/Centaur booster program. During his tenure with General Dynamics, Garret participated in more than 50 launches while working in the Electrical, Ground Instrumentation, Payload Mission Integration, Telemetry and Project Management divisions.

Garrett continues to live in Cocoa with his wife and their three daughters. In his free time, Garrett enjoys nature photography, fishing, and actively supporting his daughters in their sports. Garrett himself is also an accomplished athlete, having earned a black belt in karate.

[ANS thanks the 2017 AMSAT-NA Symposium Committee for the above information]

Satellite Shorts From All Over

Congratulations to Alex N7AGF? for earning his VUCC Satellite Award. Alex wrote, "It took almost a year. Thanks to all the operators/rovers
who helped me get there!" Alex was licensed in 1992. He is a digital and satellite enthusiast. He is a life member of AMSAT and the ARRL.

[ANS thanks AMSAT Twitter for the above information]

The Daily DX has reported that RI1F has been reported on 14.040 and 10.127 MHz CW. Members of the Russian Robinson Club (RRC) had announced plans for activity on 160-10 meters, including the WARC bands, VHF and UHF. Operations will be on CW, SSB, the Digital modes, EME (dates are October 3-7) and the satellites. (via the Daily DX)

[ANS thanks The Daily DX for the above information]

Gérard Auvray, F6FAO, passed away on 17 October 2017.

Gerard was Amsat-F president. He was very involved in the Hamradio satellite community and contributed to several satellites that were launched in space : Arsène, Spoutnik 40, Spoutnik 41, Idefix 1 et 2, cubesat like Robusta, QB50 P2, X-cubesat et Spacecube.

He also shared his passion with many students, and hamradio operators. He has contributed to other projects / activities such as providing help during 1985 Mexico City earthquake, promoting experimental balloons and solar balloons… He was also involved in Big Jump project.

[ANS thanks AMSAT dot org for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
Chris Bradley,AA5EM
aa5em at amsat dot org

Sent via AMSAT-BB at amsat.org. AMSAT-NA makes this open forum available
to all interested persons worldwide without requiring membership. Opinions expressed are solely those of the author, and do not reflect the official views of AMSAT-NA. Not an AMSAT-NA member? Join now to support the amateur satellite program! Subscription settings: http://www.amsat.org/mailman/listinfo/amsat-bb